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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/647,659	10/04/2000	Masahito Ozawa	33082W052	1455

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EXAMINER

GRAYBILL, DAVID E

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 12/05/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/647,659

Applicant(s)

OZAWA ET AL.

Examiner

David E Graybill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 3-17 have been renumbered 2-16.

Claims 1-9 are objected to because claim 1, line 9, is improperly punctuated with a period.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 16 there is ambiguous and insufficient literal antecedent basis for the language, "the substrate," "the buffer means," and, "the alignment means."

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In the rejections infra, reference labels are generally recited only for the first recitation of identical claim language.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 2-5, 9, 10 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Akimoto (5803932).

At column 4, line 26 to column 7, line 45; column 9, line 54 to column 10, line 19; and column 37, lines 7-8, Akimoto teaches the following:

1. An alignment processing mechanism comprising;
a conveying mechanism 34 for conveying a substrate to be processed, an alignment mechanism 42 for aligning the substrate conveyed by the conveying mechanism to a predetermined direction by causing the substrate to rotate, and a buffer mechanism 41A for relaying the substrate from the conveying mechanism to the alignment mechanism. wherein the buffer mechanism is adapted to temporarily hold the substrate conveyed by the conveying

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mechanism, and to pass the temporarily holding substrate to the alignment mechanism by changing a relative position of the substrate to the alignment mechanism based on a state of the alignment mechanism, in such a manner that a center of the substrate is located on a rotational axis of the alignment mechanism.

2. An alignment processing mechanism according to 1, further comprising:

a second conveying mechanism for conveying the substrate aligned by the alignment mechanism.

3. An alignment processing mechanism according to 1, wherein:

the buffer mechanism has at least two holding members 41D for holding the substrate in a vicinity of the alignment mechanism.

4. An alignment processing mechanism according to 3, wherein:

the holding members are integratedly able to move vertically with respect to the alignment mechanism, in order to pass the substrate held thereby to the alignment mechanism.

5. An alignment processing mechanism according to 3, wherein:

each of the holding members has a supporting member ("tips") for supporting a reverse surface of the substrate.

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9. A semiconductor processing unit comprising: an alignment means 42 for placing a substrate to be processed onto a stage 44 and for conducting an alignment process by causing the substrate to rotate, a buffer means 41A for temporarily holding another substrate in a vicinity of the stage while the alignment process is conducted, a means 50 for moving the stage and the buffer means relatively to each other and placing the substrate held by the buffer means onto the stage in such a manner that a center of the substrate is located on a rotational axis of the stage, and at least a conveying means 34 for passing or receiving the substrate to or from the alignment means and/or the buffer means.

10. A semiconductor processing unit according to 9, wherein: the buffer means has: a plurality of holding members 41D arranged around the stage and capable of holding the substrate, and a means for switching a position of the plurality of holding members between a first position wherein the plurality of holding members hold the substrate and a second position wherein the plurality of holding members are away from a space in which the substrate may move.

13. A semiconductor processing unit according to 9, further comprising: a first conveying means 34 for passing the substrate

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to the buffer means, and a second conveying means for receiving the substrate from the stage.

14. A semiconductor processing unit according to 9, further comprising: a containing means 53, 54 for containing a plurality of substrates, and a processing chamber ("exposure apparatus") for conducting a process to a substrate, wherein the containing means, the alignment means and the processing chamber are arranged on substantially a straight line.

15. A semiconductor processing unit according to 9, further comprising:

a plurality of containing means C1, C2, each of which is adapted to contain a plurality of substrates, and
a plurality of processing chambers 39, 40, each of which is adapted to conduct a process to a substrate,
wherein the plurality of containing means, the alignment means and the plurality of processing chambers are arranged around the conveying means 34.

To further clarify the teaching of a second conveying mechanism for conveying the substrate aligned by the alignment mechanism, and a second conveying means for receiving the substrate from the stage, it is noted that, as cited, Akimoto teaches that the substrate "is conveyed from the table 54 into the exposure apparatus"; hence, it is inherent that the

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substrate aligned by the alignment mechanism is conveyed by a second conveying means for receiving the substrate from the stage.

To further clarify the teaching of a means for switching a position of the plurality of holding members between a first position wherein the plurality of holding members hold the substrate and a second position wherein the plurality of holding members are away from a space in which the substrate may move, it is noted that, as cited, Akimoto teaches that the holding members are vertically movable; therefore, Akimoto teaches switching a first vertical position of the plurality of holding members between a first uppermost position wherein the plurality of holding members hold the substrate and a second lowermost position wherein the plurality of holding members are away from the uppermost space in which the substrate may move. Moreover, it is inherent that the switching is performed by a switching means.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the

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art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-8, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto as applied to claims 1, 2-5, 9, 10 and 13-15, and further in combination with Somekh (5643366).

As cited, Akimoto teaches the following:

11. A semiconductor processing unit according to 10, wherein: each of the plurality of holding members is provided at an upper portion of each of a plurality of supporting members vertically standing around the stage and at substantially regular intervals with respect to a peripheral direction.

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12. A semiconductor processing unit according to 10, wherein: each of the plurality of holding members has a holding surface for supporting a peripheral portion of a reverse surface of the substrate when the plurality of holding members are located at the first position.

However, Akimoto does not appear to explicitly teach the following:

6. An alignment processing mechanism according to 5,

wherein:

the supporting member of each of the holding members is adapted to rotate in such a manner that the supporting member goes away from the reverse surface of the substrate.

7. An alignment processing mechanism according to 6, wherein:

each of the holding members has: a supporting surface for coming in contact with and supporting the reverse surface of the substrate, and a tapered surface inclined from the supporting surface and formed correspondingly to an outside periphery of the substrate.

8. An alignment processing mechanism according to 7, wherein: an alignment mechanism has a stage for being placed the substrate, and a driving mechanism for causing the stage to rotate in a horizontal plane.

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11. At least one of intervals between any two of the plurality of supporting members under a situation that the plurality of holding members are located higher than the stage is an interval through which the substrate held by the conveying means can move.

12. A tapered portion formed by a slope extending outward and upward from the holding surface, and a border between the holding surface and the tapered portion forms a line substantially corresponding to an outside periphery of the substrate while the substrate is held.

Nonetheless, at column ?? Somekh teaches an alignment processing mechanism wherein a supporting member 76 of each of holding members 86, 87 is adapted to rotate in such a manner that the supporting member goes away from the reverse surface of a substrate 40, each of the holding members has: a supporting surface 80 for coming in contact with and supporting the reverse surface of the substrate, and a tapered surface 81 inclined from the supporting surface and formed correspondingly to an outside periphery of the substrate, and at least one of intervals between any two of the plurality of supporting members under a situation that the plurality of holding members are located higher than the stage is an interval through which the substrate held by the conveying means can move, and a tapered portion 81

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formed by a slope extending outward and upward from the holding surface, and a border between the holding surface and the tapered portion forms a line substantially corresponding to an outside periphery of the substrate while the substrate is held. In addition, it would have been obvious to combine the apparatus of Somekh with the apparatus of Akimoto because it would provide an alignment processing mechanism.

Also, in the combination, Akimoto teaches the following:

9. An alignment processing mechanism according to 8, wherein: an alignment mechanism has a stage for being placed the substrate, and a driving mechanism for causing the stage to rotate in a horizontal plane.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akimoto as applied to claims 1, 2-5, 9, 10 and 13-15, and further in combination with Ozawa (5474410).

As cited, Akimoto teaches the following:

16. A semiconductor processing unit according to 9, further comprising:

an alignment chamber having an alignment means, a buffer means and a first conveying means 44, a containing means C1 arranged adjacently to the alignment chamber, for containing a plurality of substrates, a conveying chamber arranged adjacently to the alignment chamber, having a second conveying means 34,

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and a vacuum processing chamber 348 arranged adjacently to the conveying chamber, for conducting a vacuum process to a substrate, wherein the first conveying means is adapted to take out a substrate from the containing means, to pass the substrate to the buffer means, to receive the substrate from the stage of the alignment means and to convey the substrate to the conveying chamber, and the second conveying means is adapted to receive the substrate from the alignment chamber and convey the substrate to the vacuum processing chamber.

To further clarify the teaching of the vacuum chamber in the particular claimed apparatus, it is noted that, as cited, Akimoto teaches, "The first to third embodiment can be employed in any possible combination."

However, Akimoto does not appear to explicitly teach a load-lock means arranged adjacently to the alignment chamber, wherein the first conveying means is adapted to convey the substrate to the load-lock means, and the second conveying means is adapted to receive the substrate from the load-lock means. Notwithstanding, at column 9, line 12 to column 13, line 57, Ozawa teaches a load-lock means 83 arranged adjacently to an alignment chamber 70, wherein a first conveying means 71 is adapted to convey a substrate w to the load-lock means, and a second conveying means 61 is adapted to receive the substrate

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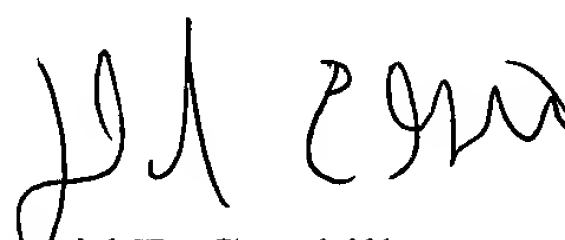
from the load-lock means. Moreover, it would have been obvious to combine the apparatus of Ozawa with the apparatus of Akimoto because it would reduce process contamination.

The prior art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show apparatus for manufacturing a semiconductor package similar to the apparatus of the instant invention.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist whose telephone number is 703-308-1782.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/305-3431.


David E. Graybill
Primary Examiner
Art Unit 2814

D.G.
21-Nov-01